

# SERVICE MANUAL

---

RADIO RECEIVER

---

This Service Manual is the "Revision Publishing" and replaces "Simple Manual"  
CR-DX501 YU(S)(S/M Code No. 09-003-343-8T1)  
CR-DX501 YZ(S), YL(S)(S/M Code No. 09-003-343-8T2).

## SPECIFICATIONS

<b>Frequency range</b>	The AM step switch is set to 10 kHz: AM: 530 – 1,710 kHz (10 kHz step) FM: 87.5 – 108.1 MHz (200 kHz step) The AM step switch is set to 9 kHz: AM: 531 – 1,602 kHz (9 kHz step) FM: 87.5 – 108 MHz (50 kHz step)
<b>Maximum output</b>	7 mW + 7 mW (EIAJ 32 ohms) (YU<S>/YL<S>models) 4 mW + 4 mW (EIAJ 32 ohms) (YZ<S>model)
<b>Power source</b>	DC 3 V using two size AAA (R03) batteries
<b>Output</b>	Headphones jack (Stereo mini jack)
<b>Maximum dimensions</b>	74.5 (W) × 82 (H) × 29.5 (D) mm (3 × 3 1/4 × 1 3/16 in.)
<b>Weight</b>	Approx. 83 g (2.9 oz) (excluding battery)

- Design and specifications are subject to change without notice.

## ACCESSORIES/PACKAGE LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8A-RC7-901-010	IB,YU(3L)<YU<S>>	
1	8A-RC7-904-010	IB,YL(ESP)<YL<S>>	
1	8A-RC7-905-010	IB,YZ(EGF)<YZ<S>>	
1	8A-RC7-906-010	IB,YZ(SID)<YZ<S>>	
1	8A-RC7-907-010	IB,YZ(PHC)<YZ<S>>	
2	87-B30-319-010	HEADPHONE,HP-M046(S)	NECK-BAND
3	8A-RC7-004-010	CLIP,BELT	

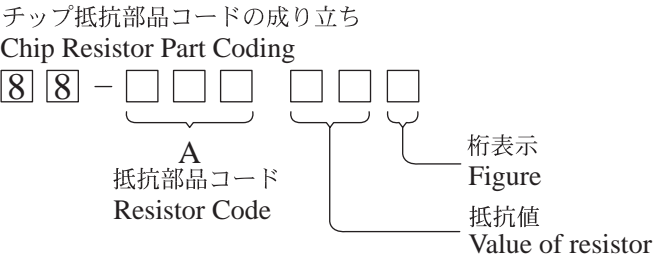
# ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".


REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C146	87-A10-463-080		C-CAP,U 0.47-10 Z F
	87-A21-407-040	C-IC,TA2104BFN		C147	87-A10-463-080		C-CAP,U 0.47-10 Z F
	87-017-642-080	IC,CXA1622M		C148	87-012-274-080		CHIP CAP,U 1000P-50B
	87-A21-605-010	C-IC,TC9318FA-056		C149	87-012-274-080		CHIP CAP,U 1000P-50B
	87-A20-755-080	C-IC,AK93C45AF		C150	87-010-831-080		C-CAP,U,0.1-16F
TRANSISTOR				C151	87-010-196-080		CHIP CAPACITOR,0.1-25
	89-342-153-080	TR,2SC4215		C152	87-010-082-010		CAPACITOR, 220MF 4V/87-0
	89-341-165-080	CHIP TRANSISTOR 2SC4116GR		C153	87-010-082-010		CAPACITOR, 220MF 4V/87-0
	89-113-625-080	TR,2SA1362GR(120MHZ,0.		C158	87-010-031-010		CAP,E 3.3-25 M BK
	87-026-467-080	TR,HN1C01F (0.3W)		C159	87-010-031-010		CAP,E 3.3-25 M BK
	89-508-804-080	CHIP FET 2SK880Y		C170	87-010-162-080		CAP, CHIP 47P
DIODE				C171	87-010-805-080		CAP, S 1-16
	87-020-339-080	CHIP DIODE,1SS226		C172	87-010-188-080		CAP,CHIP 6800P
	87-001-553-080	C-DIODE 1SS322		C173	87-010-501-010		CAP,E 47-4 M KS
MAIN C.B				CF101	87-A91-162-010		FLTR,PFS450A7
BPF101	87-A90-749-010	FLTR,GFEB5		CF102	87-A90-991-010		FLTR,SFE10.7 MS239-A
C101	87-012-199-080	CAP 220P		CF103	87-A91-094-010		FLTR,CDA10.7 MG80A
C102	87-012-286-080	CAP, U 0.01-25		J101	8A-RCL-608-010		JACK,TC38 ST W/O SW
C103	87-010-831-080	C-CAP,U,0.1-16F		L102	8A-RC7-601-010		COIL,FM RF
C104	87-010-873-080	C-CAP,U 560-50 SL		L103	8A-RC7-602-010		COIL,FM OSC
C105	87-012-335-080	C-CAP,U 270P-50 SL		L104	87-003-152-080		COIL, 100UH
C107	87-012-172-080	CAPACITOR CHIP U 10P CH		L105	8A-RC7-603-010		COIL,BAR-ANT
C108	87-012-167-080	C-CAP,U 5P-50 CH		L110	87-003-231-080		C-COIL 1UH
C109	87-010-873-080	C-CAP,U 560-50 SL		L111	87-003-231-080		C-COIL 1UH
C110	87-010-872-080	C-CAP,U 470P-50 SL		L112	87-003-231-080		C-COIL 1UH
C111	87-012-162-080	C-CAP,U 1P-50 CK		SW102	87-A91-152-010		SW,SL 1-1-2 SSSS212-11-A
C112	87-012-274-080	CHIP CAP,U 1000P-50B		T101	87-A91-366-010		IFT,MW 5PLG
C114	87-010-197-080	CAP, CHIP 0.01 DM		T102	87-A91-366-010		IFT,MW 5PLG
C115	87-012-172-080	CAPACITOR CHIP U 10P CH		TC101	87-A91-657-010		TRIMMER,20P 4.0X4.5 ECRL
C116	87-012-272-080	C-CAP,U 680P-50 B		VC101	87-A40-462-040		C-VARI-CAP,SVC347(S)
C117	87-012-174-080	CAP CHIP CERA SS 12P CHJ		VC102	87-A40-471-070		C-VARI-CAP,KV1435
C118	87-012-268-080	C-CAP,U 330P-50 B		VC103	87-A40-471-070		C-VARI-CAP,KV1435
C119	87-A10-047-080	C-CAP,U 1-10 Z F		VER001	87-001-553-080		C-DIODE 1SS322
C120	87-A10-047-080	C-CAP,U 1-10 Z F		VR101	87-A91-741-010		VR,RTRY 20KBX2 H XV0102GPV1NB
C121	87-010-831-080	C-CAP,U,0.1-16F		FRONT C.B			
C122	87-A10-047-080	C-CAP,U 1-10 Z F		C501	87-012-286-080		CAP, U 0.01-25
C123	87-010-831-080	C-CAP,U,0.1-16F		C502	87-010-132-010		CAP, ELECT 1-50V
C124	87-012-286-080	CAP, U 0.01-25		C503	87-010-831-080		C-CAP,U,0.1-16F
C125	87-012-286-080	CAP, U 0.01-25		C504	87-010-501-010		CAP GAS 47UF 4V
C126	87-A10-463-080	C-CAP,U 0.47-10 Z F		C506	87-012-176-080		CAP 15P
C127	87-010-419-010	CAP,E 4.7-16 SRE		C507	87-012-176-080		CAP 15P
C128	87-010-831-080	C-CAP,U,0.1-16F		C508	87-010-831-080		C-CAP,U,0.1-16F
C129	87-010-082-010	CAPACITOR, 220MF 4V/87-0		C509	87-010-831-080		C-CAP,U,0.1-16F
C130	87-012-286-080	CAP, U 0.01-25		C510	87-010-831-080		C-CAP,U,0.1-16F
C131	87-012-286-080	CAP, U 0.01-25		C511	87-010-831-080		C-CAP,U,0.1-16F
C132	87-012-286-080	CAP, U 0.01-25		C512	87-012-273-080		C-CAP,U 820P-50 B
C133	87-010-082-010	CAPACITOR, 220MF 4V/87-0		C513	87-012-273-080		C-CAP,U 820P-50 B
C134	87-010-831-080	C-CAP,U,0.1-16F		C514	87-012-273-080		C-CAP,U 820P-50 B
C135	87-010-033-010	CAP,E 10-16		C515	87-012-273-080		C-CAP,U 820P-50 B
C136	87-010-033-010	CAP,E 10-16		LCD001	8A-RC7-605-010		LCD,ARC-7
C137	87-012-274-080	CHIP CAP,U 1000P-50B		SW511	87-A91-152-010		SW,SL 1-1-2 SSSS212-11-A
C139	87-012-285-080	C-CAP,U 8200P-50 KB		SW512	87-A91-152-010		SW,SL 1-1-2 SSSS212-11-A
C140	87-010-785-080	C-CAP,U0.015-25BK		X501	87-A70-187-010		VIB,XTAL 75KHZ CFV206
C141	87-010-785-080	C-CAP,U0.015-25BK					
C143	87-010-781-080	C-CAP,U 390P-50 SL					

- Regarding connectors, they are not stocked as they are not the initial order items.  
The connectors are available after they are supplied from connector manufacturers upon the order is received.

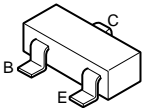
○チップ抵抗部品コード／CHIP RESISTOR PART CODE



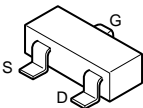
チップ抵抗  
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A
				外形／Form	L	W	t	Resistor Code : A
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

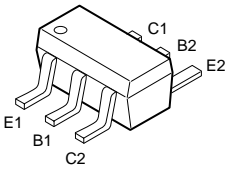
TRANSISTOR ILLUSTRATION



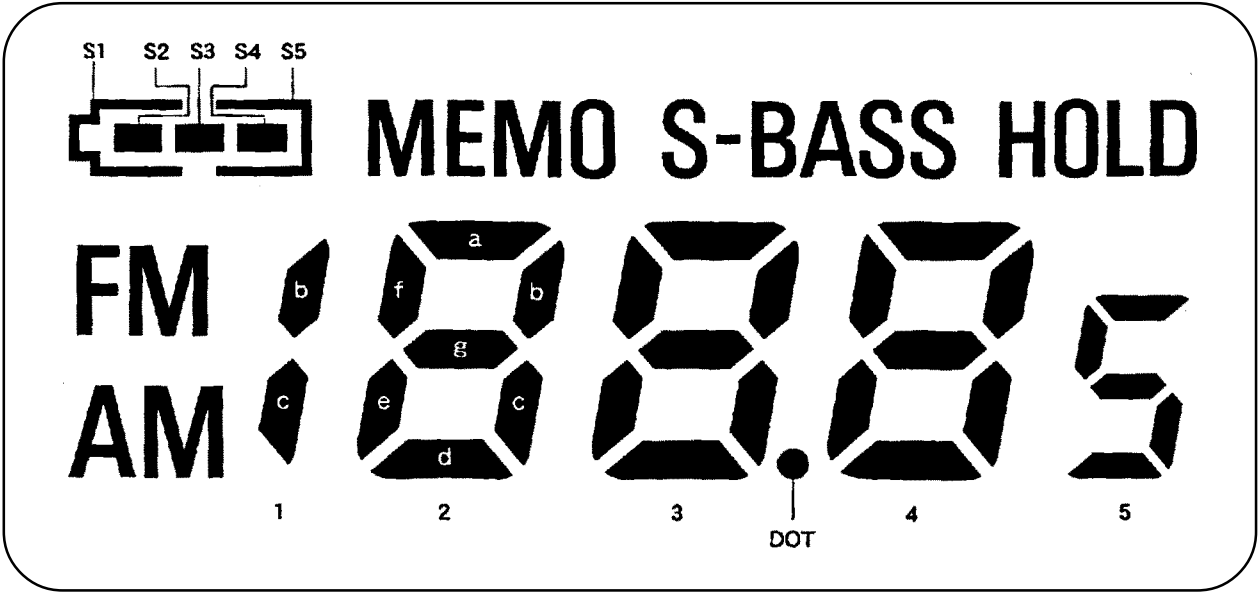
2SA1362GR  
2SC4116GR  
2SC4215



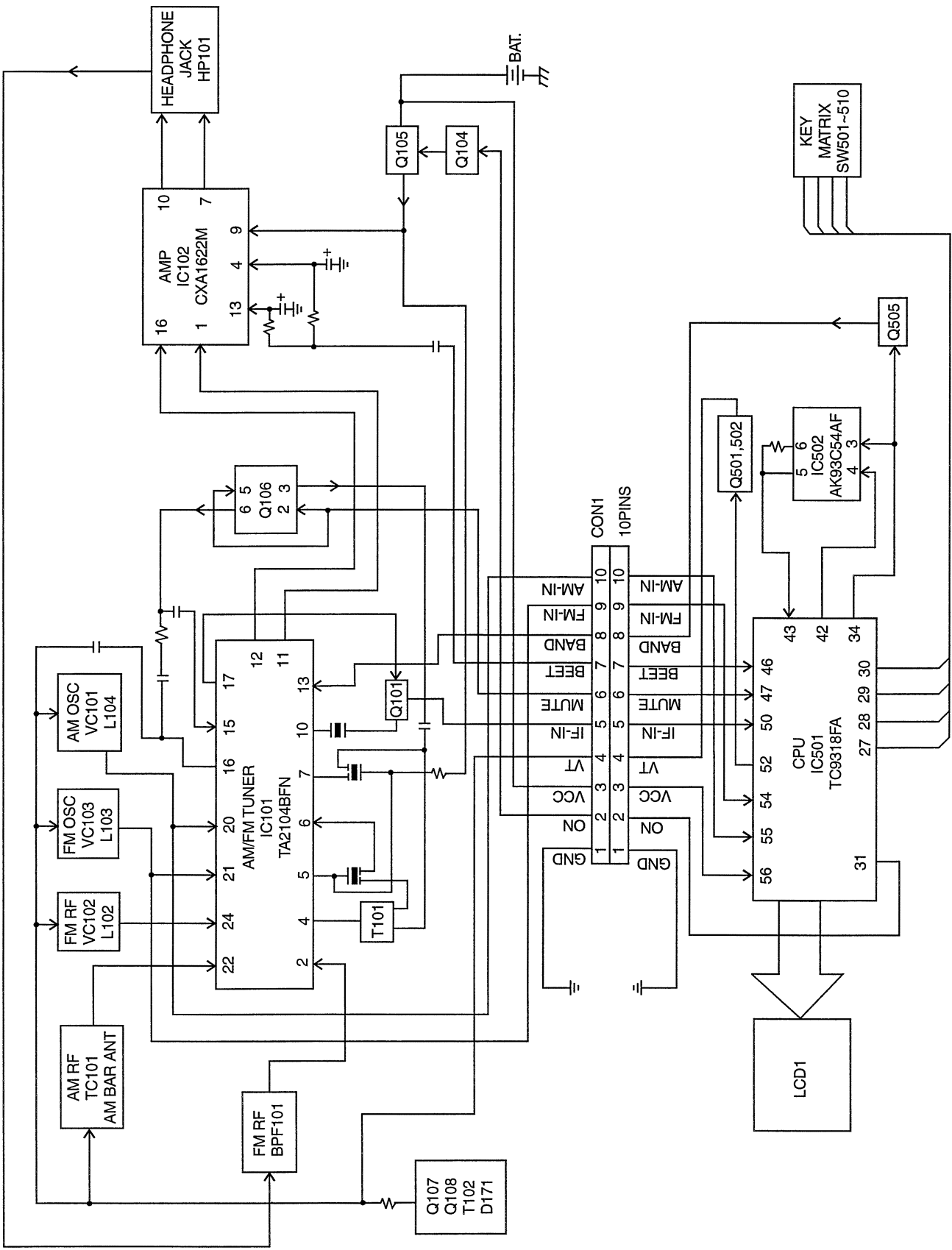
2SK880Y



HN1C01F



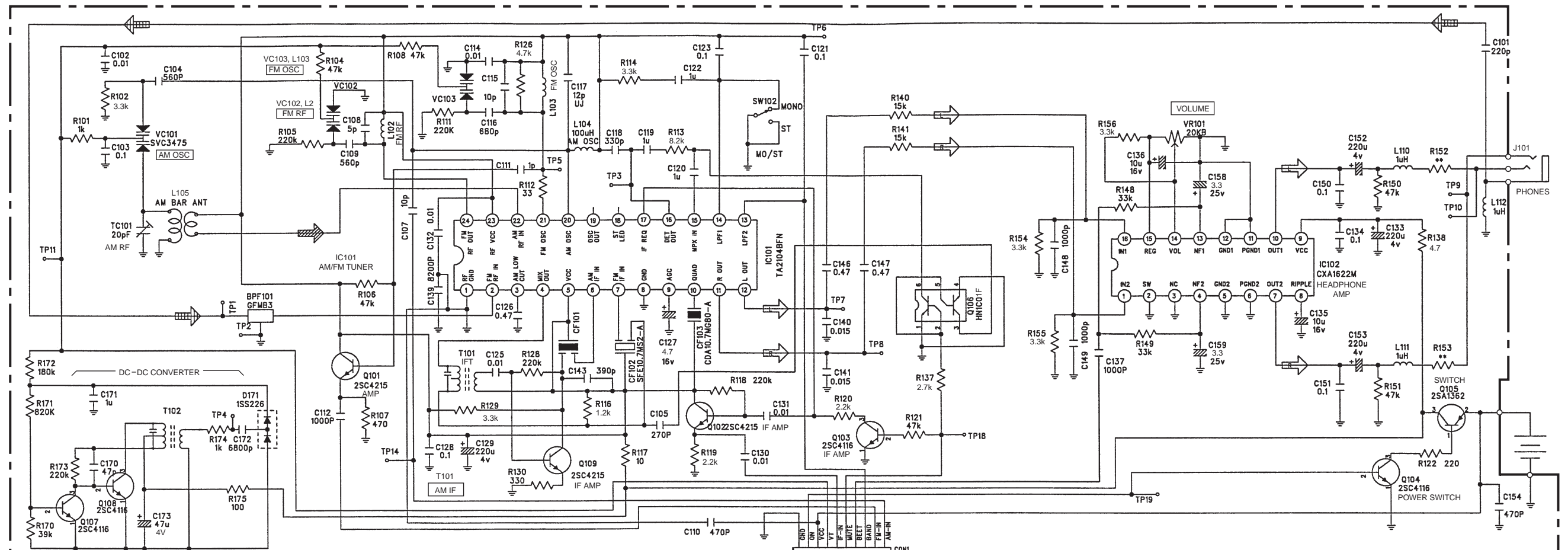
No.	COM1	COM2	COM3
1	COM1	---	---
2	---	COM2	---
3	---	---	COM3
4	---	---	FM
5	---	AM	---
6	---	---	S1
7	---	---	S2
8	---	---	S3
9	1c	1b	S4
10	2e	2f	S5
11	2g	2a	MEMO
12	2d	2c	2b
13	---	---	S-BASS
14	3e	3f	3a
15	3d	3g	3b
16	---	DOT	3c
17	4d	4e	4f
18	4g	4a	HOLD
19	5	4c	4b





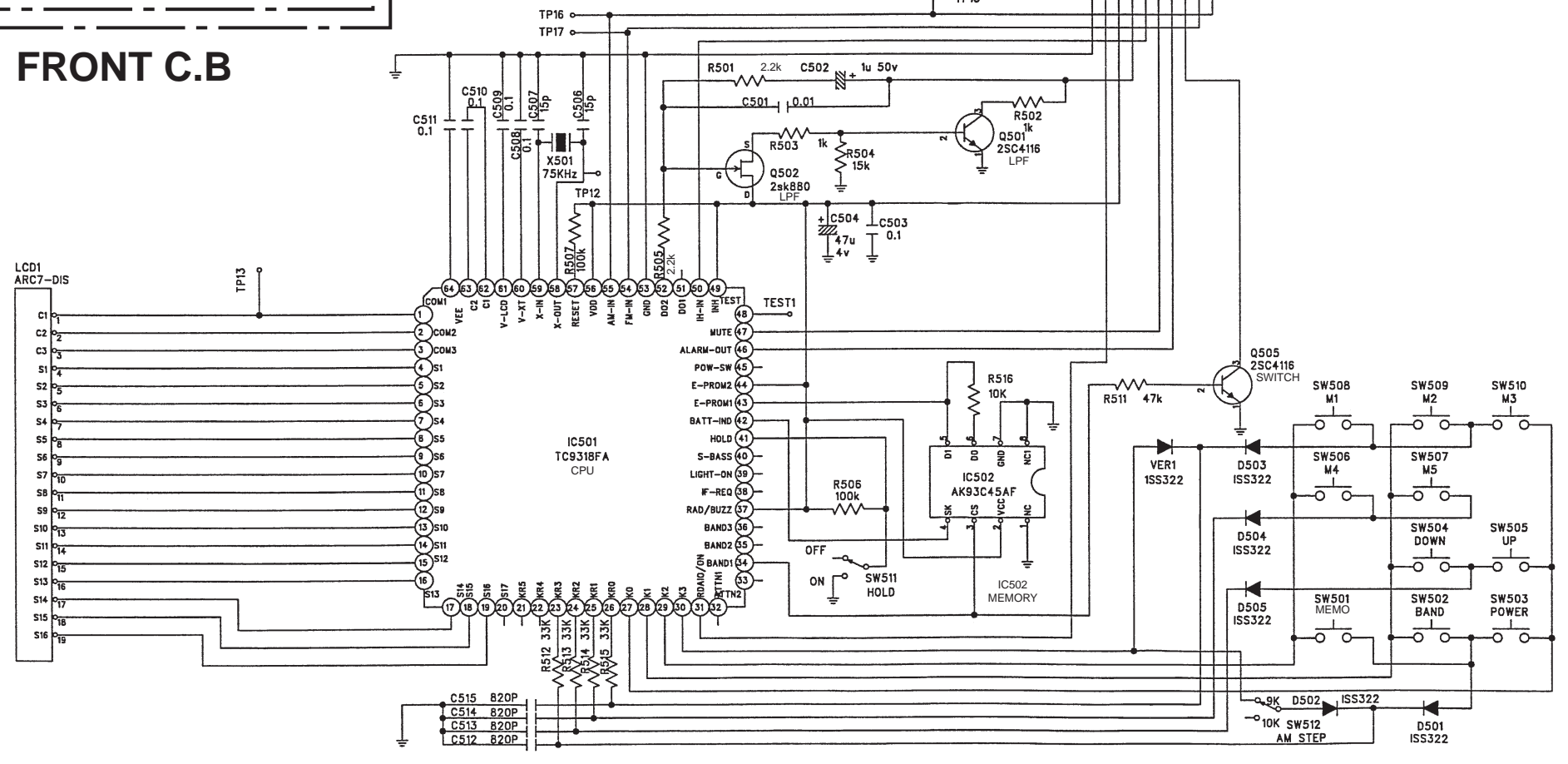


### SCHEMATIC DIAGRAM



**MAIN C.B**

**FRONT C.B**



NOTE:

➡ : FM-SIGNAL

➡ : AM-SIGNAL

 : AUDIO R SIGNAL

➡ : AUDIO L SIGNAL

AM	J/Z	531 – 1602 kHz
	YU	530 – 1710 kHz
	VT	0.95v – 7.0v
FM	J/Z	87.5 – 108 MHz
	YU	87.5–108.1 MHz
	VT	3.5v – 6.5v

	YU	YJ	YZ
SW512	10K	9K	9K
<b>**</b>	<b>33</b>	<b>33</b>	<b>68</b>
TUN STEP	10K/0.2M	9K/0.05M	9K/0.05M

VOLTAGE CHART

TUNER SECTION

TEST CONDITION: SET AM/FM TUNER ON ONE FREQUENCY

IC101 (TA2104BFN)

PIN'S NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
FM	0	0.77	0	2.10	2.85	2.71	2.83	0	0.03	2.06	1.14	1.15
AM	0	0	1.00	2.77	2.88	2.20	2.88	0	0.18	2.78	1.14	1.12
PIN'S NUMBER	13	14	15	16	17	18	19	20	21	22	23	24
FM	2	2.20	0.70	1.12	1.12	1.80	2.70	0.90	2.82	2.85	2.84	2.84
AM	0	0.70	0.70	1.00	1.20	1.50	2.70	2.88	2.80	2.88	2.88	2.88

TRANSISTOR	Q501(2SC4116)			Q502(2SK880)			Q505(2SC4116)		
	E	C	B	E	C	B	E	C	B
FM	0	3.40	0.55	0.59	0.28	2.69	0	1.96	0
AM	0	0.80	0.55	0.60	0.29	2.88	0	0.01	0.60

TRANSISTOR	Q107(2SC4116)			Q108(2SC4116)			Q101(2SC4215)			Q109(2SC4215)		
	E	C	B	E	C	B	E	C	B	E	C	B
AM	0	0.60	0.50	0	0	0.70	0	1.40	0.60	0.10	1.48	0.80

TRANSISTOR	Q102(2SC4215)			Q103(2SC4116)		
	E	C	B	E	C	B
AM	1.12	2.70	1.79	0	1.20	0

POWER AMP SECTION

TEST CONDITION: TUNER ON

IC501 (TC9318FA)

PIN'S NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
FM	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
PIN'S NUMBER	13	14	15	16	17	18	19	20	21	22	23	24
FM	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.55	1.55	1.55	1.55	1.55
PIN'S NUMBER	25	26	27	28	29	30	31	32	33	34	35	36
FM	1.55	1.55	1.32	1.30	0.70	0.75	0.75	0	0	0	0	2.60
PIN'S NUMBER	37	38	39	40	41	42	43	44	45	46	47	48
FM	2.74	0	0	0	2.71	0	0	2.95	0.90	0	0	0
PIN'S NUMBER	49	50	51	52	53	54	55	56	57	58	59	60
FM	2.70	1.40	0	0.27	0	1.50	0	2.98	2.95	0.25	0.75	1.37
PIN'S NUMBER	61	62	63	64								
FM	3.00	0.74	2.25	1.50								

IC102 (LXA1622M)

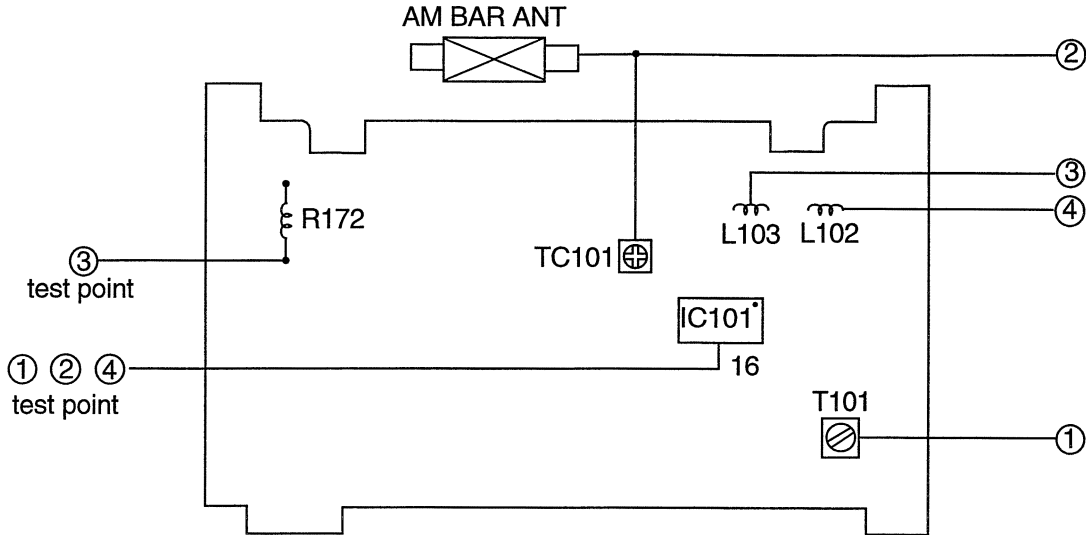
PIN'S NUMBER	1	2	3	4	5	6	7	8
FM	0	0	0	1.45	0	0	0	2.70
PIN'S NUMBER	9	10	11	12	13	14	15	16
FM	2.92	1.47	0.00	0	1.45	1.27	1.28	0

IC502 (AK93045AF)

PIN'S NUMBER	1	2	3	4	5	6	7	8
FM	0	2.75	0	0	0	0	0	0

TRANSISTOR	Q105(2SA1362)			Q104(2SC4116)		
	E	C	B	E	C	B
FM	2.95	2.90	2.10	0	0.03	0.75

ELECTRICAL ADJUSTMENT



1. AM IF Adjustment

Test point: IC101(TA2104BFN) 16 PIN and GND

Adjustment location: T101

T101 ----- 450kHz
2. AM Tracking Adjustment

Test point: IC101(TA2104BFN) 16 PIN and GND

Adjustment location: TC101, AM BAR ANT

TC101 ----- 600kHz waveform max.

AM BAR ANT----- 1400kHz waveform max.
3. FM Frequency Range Adjustment

Test point: R172

Adjustment location: L103

Set the tuner frequency to be 87.5MHz

Adjust L103 so that the test point voltage is 3.5V ±0.5V
4. FM Tracking Adjustment

Test point: IC101(TA2104BFN) 16 PIN and GND

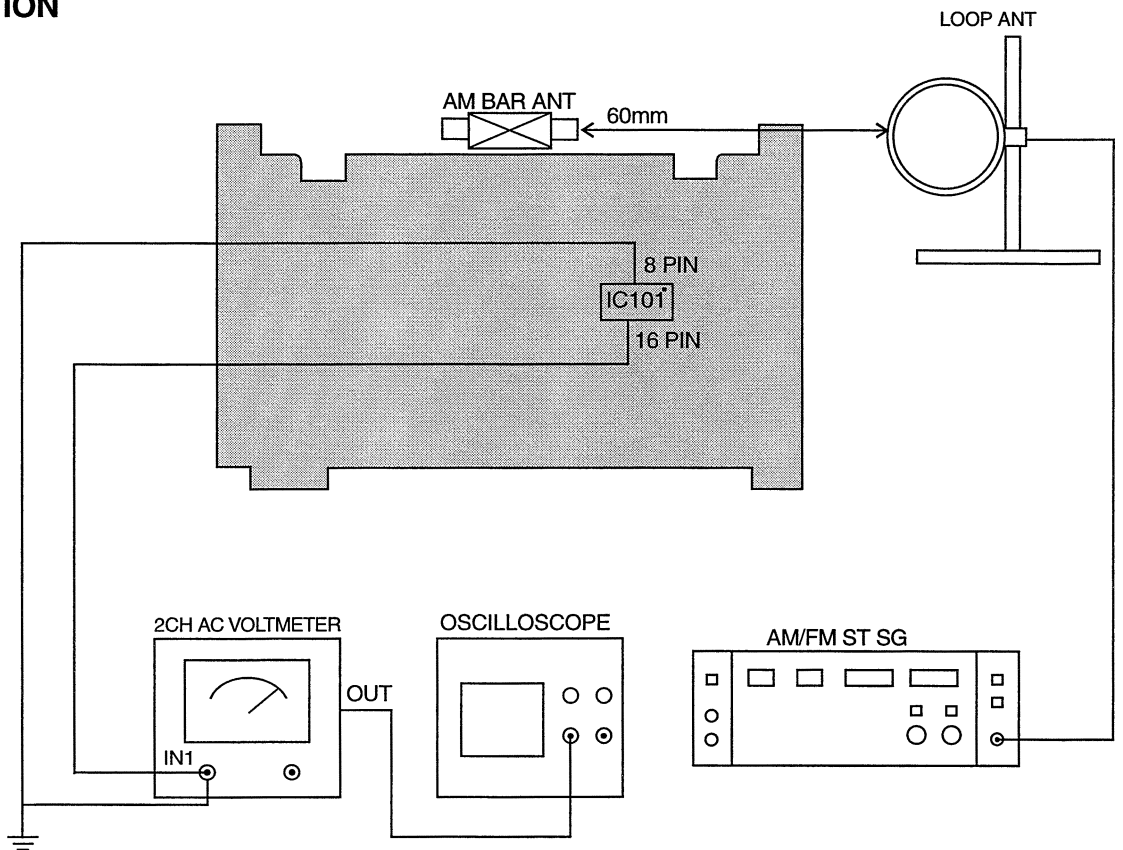
Adjustment location: L102

L102 ----- 88MHz waveform max.

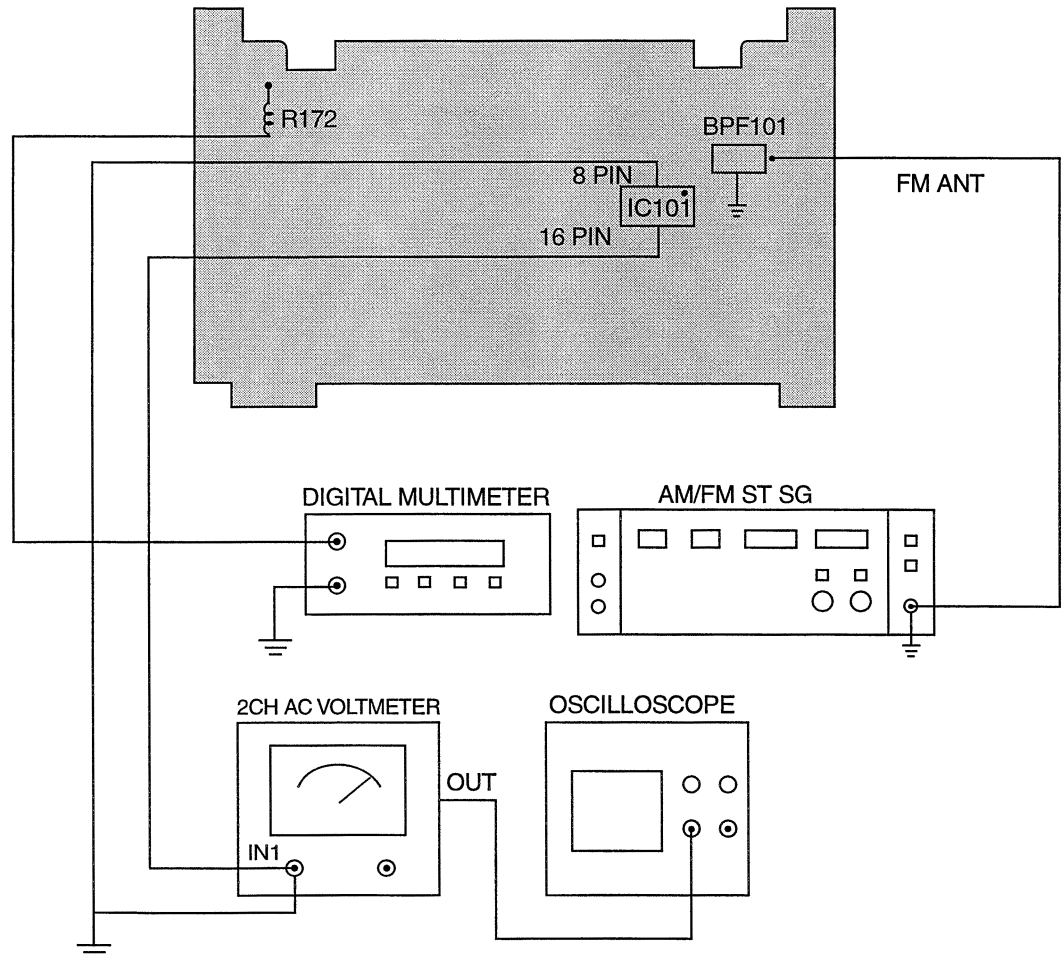


# EQUIPMENT CONNECTION DIAGRAMS

## AM SECTION



## FM SECTION



## PRACTICAL SERVICE FIGURE

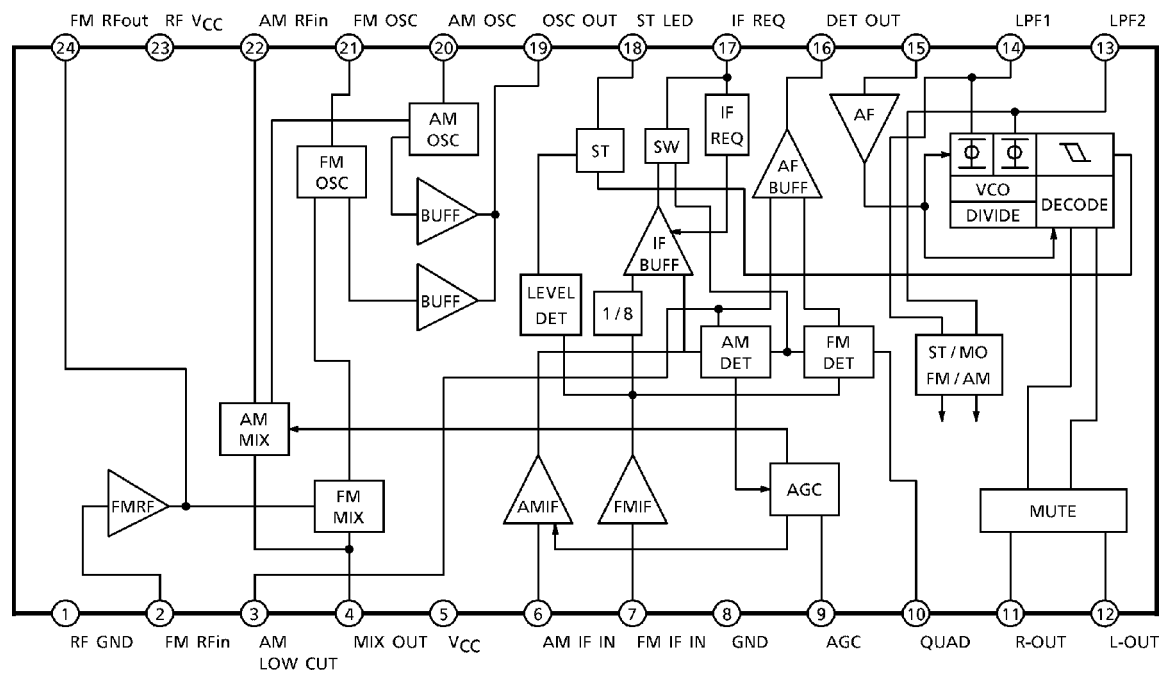
### < AM SECTION >

Sensitivity:	49dB (600kHz)
(S/N 10dB)	47dB (1,000kHz)
	45dB (1,400kHz)
Distortion:	Less than 1.5% (1,000kHz)
(Input 100dB)	
Intermediate Frequency:	450kHz±3kHz
Signal to Noise Ratio:	30dB (600kHz)
(Input 74dB)	30dB (1,000kHz)
	30dB (1,400kHz)

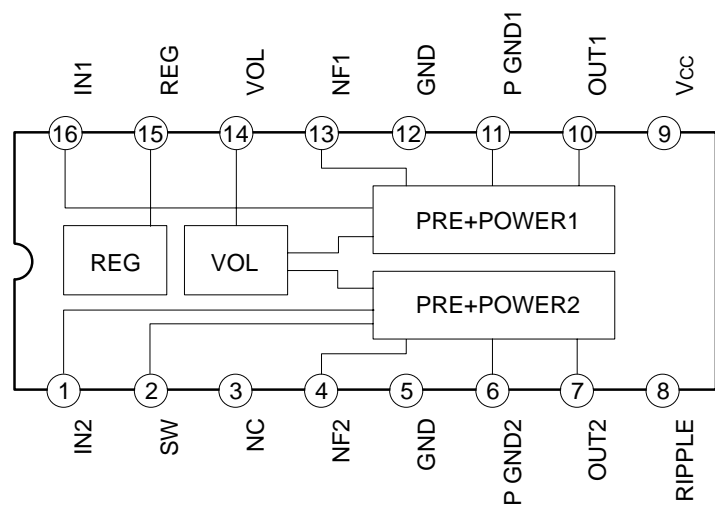
### < FM SECTION >

Sensitivity:	12dB (88MHz)
(THD 3%)	12dB (98MHz)
	12dB (100MHz)
Distortion:	Less than 1%
Intermediate Frequency:	10.7MHz±0.15MHz
Stereo Separation:	More than 25dB

IC BLOCK DIAGRAM  
IC, TA2104BFN



IC, CXA1622M

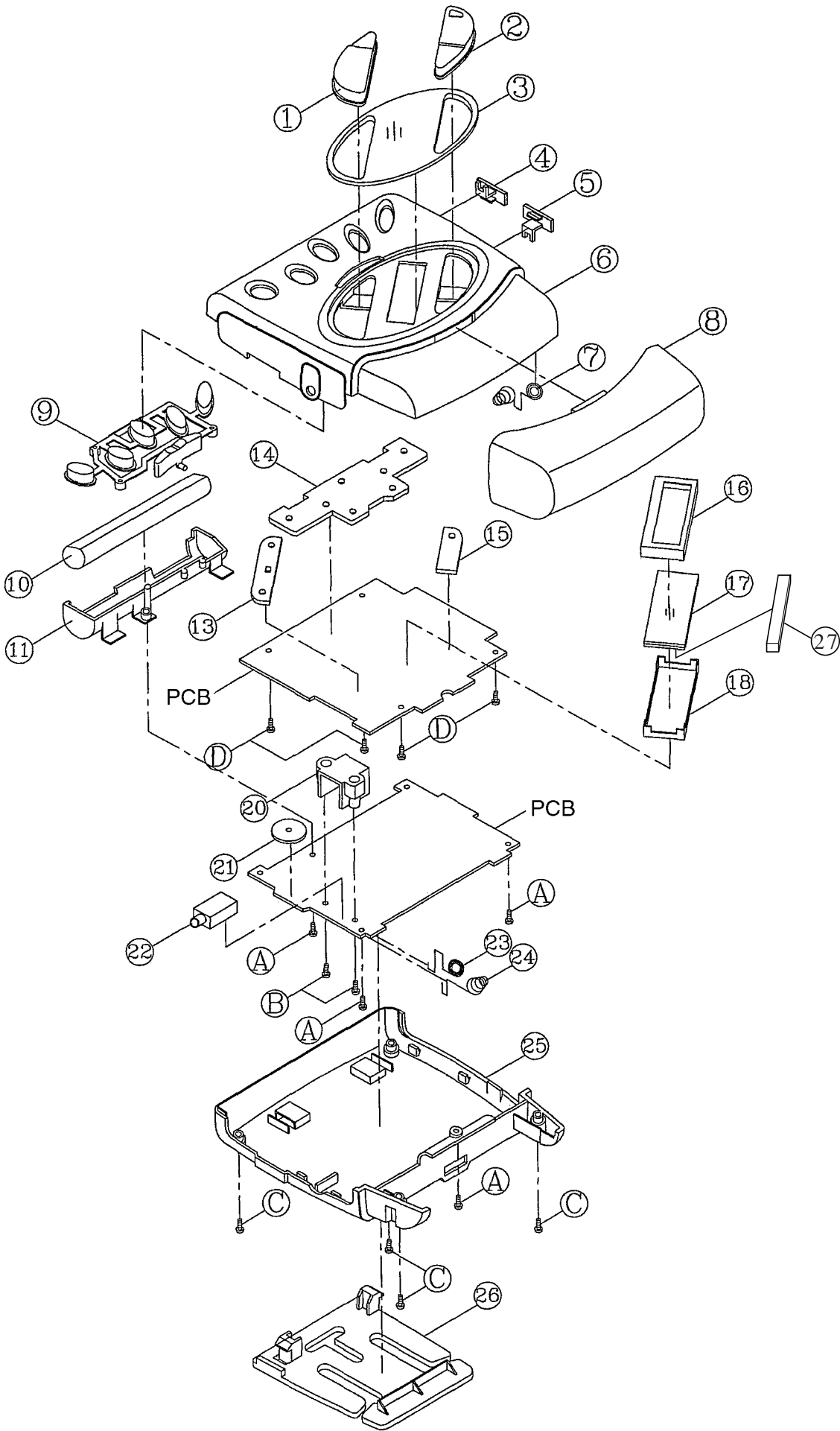


IC DESCRIPTION  
IC, TC9318FA-056

Pin No.	Pin Name	I/O	Description
1	COM1	O	LCD COMMON.
2	COM2	O	LCD COMMON.
3	COM3	O	LCD COMMON.
4	LCD1	O	LCD SEGMENT.
5	LCD2	O	LCD SEGMENT.
6	LCD3	O	LCD SEGMENT.
7	LCD4	O	LCD SEGMENT.
8	LCD5	O	LCD SEGMENT.
9	LCD6	O	LCD SEGMENT.
10	LCD7	O	LCD SEGMENT.
11	LCD8	O	LCD SEGMENT.
12	LCD9	O	LCD SEGMENT.
13	LCD10	O	LCD SEGMENT.
14	LCD11	O	LCD SEGMENT.
15	LCD12	O	LCD SEGMENT.
16	LCD13	O	LCD SEGMENT.
17	LCD14	O	LCD SEGMENT.
18	LCD15	O	LCD SEGMENT.
19	LCD16	O	LCD SEGMENT.
20	LCD17	O	LCD SEGMENT.
21	KR5	O	KEY RETURN TIMING OUTPUT
22	KR4	O	KEY RETURN TIMING OUTPUT. (Not connected)
23	KR3	O	KEY RETURN TIMING OUTPUT.
24	KR2	O	KEY RETURN TIMING OUTPUT.
25	KR1	O	KEY RETURN TIMING OUTPUT.
26	KR0	O	KEY RETURN TIMING OUTPUT.
27	K0	I	KEY INPUT.
28	K1	I	KEY INPUT.
29	K2	I	KEY INPUT.
30	K3	I	KEY INPUT.
31	RADIO ON	O	RADIO FANCTIONS, C WHEN ALARM OUTPUT, H OUTPUT.
32	ATTN1	O	WHEN ALARM OUTPUT H→H→L→L OUTPUT at 10sec. (Not connected)
33	ATTN2	O	WHEN ALARM OUTPUT H→L→H→L OUTPUT at 10sec.
34	BAND1	O	AM FANCTIONS H OUTPUT.
35	BAND2	O	FM FANCTIONS H OUTPUT. (Not connected)
36	BAND3	O	E: LW or J: TV or U: TV, WEATHER FANCTIONS H OUTPUT. (Not connected)
37	RADIO/BUZZER	I	ALARM SELECTION H : RADIO ALARM L: FBuzzer ALARM. (Connected to VDD)
38	IF REQ	O	DURING AUTO SCANNING H OUTPUT.
39	LIGHT ON	O	LIGHT KEY PUSHED H OUTPUT.
40	S-BASS OUT	O	S BASS KEY PUSHED H→L OUTPUT CICRIC.

Pin No.	Pin Name	I/O	Description
41	HOLD	I	L INPUT, KEYS HOLD.
42	E-PROM1	I/O	E-PROM INTERFACE.
43	E-PROM2	I/O	E-PROM INTERFACE.
44	BATT IND	A/D	A/D INPUT FOR BATTERY INDICATOR. (Connected to VDD)
45	POWER SW	I	H INPUT, RADIO ON.
46	ALARM OUT	O	ALARM1,ALARM2 OUTPUT.
47	MUTE	O	WHEN MUTE ON, H OUTPUT.
48	TEST	I	(Not connected)
49	INH	I	L INPUT RADIO OFF.
50	IF IN	I	IF SIGNAL INPUT.
51	DO1	O	PLL OUTPUT. (Connected to VDD)
52	DO2	O	PLL OUTPUT.
53	GND	—	GND.
54	FM IN	I	FM OSC SIGNAL INPUT.
55	AM IN	I	AM OSC SIGNAL INPUT.
56	VDD	—	Power Supply Pin.
57	RESET	I	(Pull up)
58	X OUT	O	
59	X IN	I	
60	V XT		(Pull down)
61	V LCD		
62	C1		
63	C2		
64	VEE	—	(Pull down)

MECHANICAL EXPLODED VIEW 1/1





## MECHANICAL PARTS LIST 1/1

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8A-RC7-006-010		KEY,BAND	22	8A-RCL-608-010		JACK,TC38 ST W/O SW
2	8A-RC7-007-010		KEY,POW	23	8A-RC7-206-010		BAT-CONTACT,(+)
3	8A-RC7-005-010		WINDOW,LCD	24	8A-RC7-207-010		BAT-CONTACT,(-)
4	8A-RC7-009-010		KNOB,SL HOLD	25	8A-RC7-002-010		CABI,REAR YU<YL<S>,YU<S>>
5	8A-RC7-010-010		KNOB,SL FM MODE	25	8A-RC7-011-010		CABI,REAR YZ<YZ<S>>
6	8A-RC7-001-010		CABI,FRONT YU	26	8A-RC7-004-010		CLIP,BELT
7	8A-RC7-208-010		BAT-CONTACT,(+/-)	27	8A-RC7-209-010		CONN, RUBBER LCD
8	8A-RC7-003-010		LID,BATT YU<YU<S>>	A	87-354-529-310		VT2+1.7-4
8	8A-RC7-012-010		LID,BATT YZ<YZ<S>,YL<S>>	B	87-B10-304-010		VT2+1.7-10 W/O CR
9	8A-RC7-008-010		KEY,PRE/TUNE	C	87-B10-026-030		VT2+1.7-8 CR HL
10	8A-RC7-603-010		COIL,BAR-ANT	D	87-357-529-310		VT2+1.7.0 GLD
11	8A-RC7-201-010		HLDR,ANT				
13	8A-RC7-211-010		HLDR,BAND				
14	8A-RC7-203-010		HLDR,PRESET				
15	8A-RC7-204-010		HLDR,POW/BAND				
16	8A-RC7-205-010		HLDR,LCD				
17	8A-RC7-605-010		LCD,ARC-7				
18	8A-RC7-202-010		BASE,LCD				
20	8A-RC7-210-010		HLDR,JACK				
21	87-A91-741-010		VR,RTRY 20KBX2 H XV0102GPV1NB				

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		



**アイワ株式会社** 〒110-8710 東京都台東区池之端1-2-11 ☎03(3827)3111 (代表)  
**AIWA CO.,LTD.** 2-11, IKENOHATA 1-CHOME, TAITO-KU, TOKYO 110, JAPAN TEL:03(3827)3111